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ABSTRACT

Many teachers and other educators have expressed a concern regarding the lack of student interest in many of the traditional science courses. To help rectify this problem a collaborative effort among educators and others concerned has led to the development of instructional materials that are more relevant to the lives of students. This document is the result of one such effort. This volume of Teaching General Chemistry focuses on demystifying materials chemistry so that the relationships of synthesis, processing, structure, bonding, and physical/chemical properties can be readily studied in introductory chemistry courses. This document also intended to refreshen and enliven general chemistry by providing a method to maintain student interest while illustrating the basic ideas that are important to an understanding of chemistry. Chapters are: (1) An Introduction to Materials Chemistry; (2) Atoms and Electrons; (3) Stoichiometry; (4) Determination of Structure Using Diffraction Data; (5) Common Crystalline Structures; (6) Defects in Solids; (7) Electronic Structure of Crystalline Solids; (8) Chemical Equilibrium: Acid-Base and Redox Analogies in Solids; (9) Applications of Thermodynamics: Phase Changes; and (10) Synthesis of Materials. Fifteen laboratory experiments are included and five appendixes containing a glossary, supplier information, a journal, answers to selected problems, and an index are attached. (Includes 55 demonstration). (ZWH/AA)

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